

What is claimed is:

1. An apparatus for polishing a wafer, comprising:
 - a rotatable polishing pad having a center of rotation;
 - a rinse delivery conduit positioned adjacent to the polishing pad and substantially in radial alignment with the center;
 - the rinse delivery conduit including a plurality of nozzles to dispense a rinsing liquid; and
 - the plurality of nozzles being configured and positioned to generate a higher flow rate of the rinsing liquid at the end of the rinse delivery conduit proximate to the center than at the end of the rinse delivery conduit distal to the center.
2. The apparatus according to claim 1, wherein the rinse delivery conduit has a proximal end and a distal end, the proximal end being substantially adjacent to the center and the distal end being approximately adjacent to an outer periphery of the pad.
3. The apparatus according to claim 1, wherein at least one of the nozzles proximate to the center has a first internal diameter and at least one of the nozzles distal to the center has a second internal diameter, said first internal diameter being greater than the second internal diameter.
4. The apparatus according to claim 3, wherein the rinse delivery conduit has a proximal end and a distal end, the proximal end being substantially adjacent to the center and the distal end being approximately adjacent to an outer periphery of the pad.
5. The apparatus according to claim 1, wherein the plurality of nozzles are substantially aligned on a radius of the polishing pad extending from the center and each successive nozzle in a direction toward the center has a greater internal diameter than the previous nozzle.

6. The apparatus according to claim 5, wherein the nozzles are substantially equally spaced apart along the radius.
7. The apparatus according to claim 1, wherein at least two of the nozzles proximate to the center are spaced-apart by a first distance and at least two of the nozzles distal to the center are spaced-apart by a second distance, the first distance being smaller than the second distance.
8. The apparatus according to claim 7, wherein the rinse delivery conduit has a proximal end and a distal end, the proximal end being substantially adjacent to the center and the distal end being approximately adjacent to an outer periphery of the pad.
9. The apparatus according to claim 7, wherein three of the nozzles most proximate to the center are separated by the first distance and the rest of the nozzles are separated by the second distance.
10. The apparatus according to claim 9, wherein the nozzles each have an internal diameter which is the same.
11. The apparatus according to claim 1, wherein the rinse delivery conduit is formed by two pairs of opposed sides, at least one pair of opposed sides are tapered in the direction of the center.
12. The apparatus according to claim 8, wherein both pairs of opposed sides are tapered in the direction of the center.
13. The apparatus according to claim 12, wherein the rinse delivery conduit has a proximal end and a distal end, the proximal end being substantially adjacent to the center and the distal end being approximately adjacent to an outer periphery of the pad.

14. The apparatus according to claim 12, wherein the nozzles each have an internal diameter that is the same.

15. The apparatus according to claim 1, wherein the rinse delivery conduit is operable to move from a retracted position to an extended position to provide the rinsing liquid, with the end of the rinse delivery conduit being adjacent to the center when in the extended position.

16. The apparatus according to claim 15, wherein the rinse delivery conduit includes a first conduit having an open end facing the center and second conduit having a closed end facing the center and being disposed in a sliding relationship with the first conduit, the second conduit being in the extended position to provide the rinsing liquid and the retracted position when not providing the rinsing liquid, and the first conduit including the plurality of nozzles and the second conduit including a plurality of fluid apertures.

17. The apparatus according to claim 16, wherein the first conduit is an outer conduit and the second conduit is an inner conduit disposed in sliding relationship with an interior of the outer conduit.

18. The apparatus according to claim 15, further comprising a rotary actuator and a pair of jointed extension arms extending from opposed sides of the rinse delivery conduit to the rotary actuator, wherein the rotary actuator is operable to rotate the ends of the jointed extension arms inwardly to cause the rinse delivery conduit to move from the retracted position to the extended position.

19. The apparatus according to claim 1, further comprising a slurry dispensing arm being radially aligned above the pad and the rinse delivery conduit being mounted inside of the slurry dispensing arm.

20. An apparatus for polishing a wafer, comprising:

a rotatable polishing pad having a center of rotation;

a rinse delivery conduit positioned adjacent to the polishing pad and substantially in radial alignment with the center;

the rinse delivery conduit including a plurality of nozzles to dispense a rinsing liquid; and

the rinse delivery conduit having a proximal end and a distal end, the proximal end being substantially adjacent to the center and the distal end being approximately adjacent to an outer periphery of the pad.

21. The apparatus according to claim 20, wherein the rinse delivery conduit is operable to move from a retracted position to an extended position to provide the rinsing liquid, with the end of the rinse delivery conduit being adjacent to the center when in the extended position.

22. The apparatus according to claim 21, wherein the rinse delivery conduit includes an first conduit having an open end facing the center and second conduit having a closed end facing the center and being disposed in a sliding relationship with the first conduit, the second conduit being in the extended position to provide the rinsing liquid and the retracted position when not providing the rinsing liquid, the first conduit including the plurality of nozzles and the second conduit including a plurality of fluid apertures.

23. The apparatus according to claim 21, further comprising an rotary actuator and a pair of jointed extension arms extending from opposed sides of the rinse delivery conduit to the rotary actuator, wherein the rotary actuator is operable to rotate the ends of the jointed extension arms to cause the rinse delivery conduit to move from its retracted position to its extended position.

24. A method for polishing a wafer, comprising:

rotating a polishing pad having a center of rotation;
rinsing the pad with a rinsing liquid along a fixed radial line extending from the periphery of the pad to the center of the pad while the pad is rotating; and
adjusting the rinsing liquid to have at least a first flow rate at an inner region of the pad proximate to the center and at least a second flow rate at an outer region of the pad distal to the center, the first flow rate being greater than the second flow rate.

25. The method according to claim 24, wherein rinsing the pad includes providing a rinse delivery conduit having a plurality of nozzles to dispense the rinsing liquid and extending relative to the center the rinse delivery conduit from a retracted position to an extended position to dispense the rinsing liquid.

26. The method according to claim 24, wherein rinsing the pad includes providing a rinse delivery conduit including a plurality of nozzles to dispense the rinsing liquid; and
adjusting the rinsing liquid includes providing at least one of the nozzles proximate to the center with a first internal diameter and at least one of the nozzles distal to the center with a second internal diameter, said first internal diameter being greater than the second internal diameter.

27. The method according to claim 24, wherein rinsing the pad includes providing a rinse delivery conduit having a plurality of nozzles to dispense the rinsing liquid; and adjusting the rinsing liquid includes providing at least two of the nozzles proximate to the center which are spaced-apart by a first distance and at least two of the nozzles distal to the center which are spaced-apart by a second distance, the first distance being smaller than the second distance.

28. The method according to claim 24, wherein rinsing the pad includes providing a rinse delivery conduit having a plurality of nozzles to dispense the rinsing liquid; and adjusting the rinsing liquid includes providing the rinse delivery conduit which is formed by two pairs of opposed sides, at least one pair of opposed sides are tapered in the direction of the center.

29. A system to manufacture a wafer, comprising:

a polisher including a rotatable polishing pad having a center of rotation; a rinse delivery conduit positioned adjacent to the polishing pad and substantially in radial alignment with the center; the rinse delivery conduit including a plurality of nozzles to dispense a rinsing liquid; and the plurality of nozzles being configured and positioned to generate a higher flow rate of the rinsing liquid at the end of the rinse delivery conduit proximate to the center than at the end of the rinse delivery conduit distal to the center; and

a controller coupled to the polisher to control the dispensing of the rinsing liquid.

30. The system according to claim 29, wherein the rinse delivery conduit has a proximal end and a distal end, the proximal end being substantially adjacent to the center and the distal end being approximately adjacent to an outer periphery of the pad.

31. The system according to claim 29, wherein at least one of the nozzles proximate to the center has a first internal diameter and at least one of the nozzles distal to the center has a second internal diameter, said first internal diameter being greater than the second internal diameter.

32. The system according to claim 29, wherein at least two of the nozzles proximate to the center are spaced-apart by a first distance and at least two of the nozzles distal to the center are spaced-apart by a second distance, the first distance being smaller than the second distance.

33. The system according to claim 29, wherein the rinse delivery conduit is formed by two pairs of opposed sides, at least one pair of opposed sides are tapered in the direction of the center.

34. The system according to claim 29, wherein the rinse delivery conduit is operable to move from a retracted position to an extended position to provide the rinsing liquid, with the end of the rinse delivery conduit being adjacent to the center when in the extended position.